
US Phase-II Pixels Budget Prioritization of Scope

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New WBS

WBS	Tag	Description	BoE	Cost Account
6.1		Pixelsfor the ITk		
6.1.1	Task	Pixels_ANL		
6.1.1.1		Integration/System Test		
		Integration/System Test		
	INT1110			
	INT1120			
6.1.1.4		Local Supports		
		Barrel Mechancis		
	LOC1410			
	LOC1420			
		Stave Loading		
6.1.1.5		Modules		
		Bump Bonding		
	BUB1510			
	BUB1520			
		Module Assembly		
	MOD1550			
	MOD1560			
6.1.1.7		Support		
		Test Setups		

- 6.1.2 Pixels_LBNL (Maurice)
 6.1.3 Pixels_SLAC (Su Dong)
 6.1.4 Pixels_OSU (KK)
 6.1.5 Pixels_SMU (Jingbo)
 6.1.6 Pixels_UCSC (Mike H.)
 6.1.7 Pixels_OkS (Flera)
 6.1.8 Pixels_UNM (Sally)
 6.1.9 Pixels_Washington (Shih-Chieh)
- 6.1.10 Pixels_Wisconsin (Sau Lan)
 6.1.11 Pixels_OkU (Philipp)
 6.1.12 Pixels_SB (Dmitri)

L3: Institute
 L4: Deliverables.
 (might more than
 one deliverable).

BoE Needed from
 each Institute



Introduction

- Guidance from US-ATLAS Management, from JOG Meeting (end of September):
Pixels budget: \$27.124M:
 - CORE: \$5.943M.
 - Labor/MS/Travel: \$21.181M.
- All Sub-systems going through budget scrubbing.
- ITk: 5-6 November at LBNL.
 - Propose a baseline (that fits the guidance) scope and list of priorities.
 - Review costs/profile/etc...
- Management will prioritize at Project Level (Pixels Budget may change/increase).
- DOE CD-0 in December.
- NSF CDR in February.
- No FY17 Construction funds (for Pixels) – Wish-list has \$3.1M.... Will:
 - Rely on R&D funds (not sufficient).
 - Move some costs to later years.
 - Cut some costs.

Base Of Estimate

- One BoE per Deliverable: 7 in Pixels:
 - Integration.
 - Global Mechanics.
 - Services.
 - Local Supports.
 - Modules.
 - Off-Detector Elec.
 - Supports (Test setups and Irradiations/Testbeam).
- If more than one Institute/Deliverable: each Institute writes its own estimate, L2 Manager put everything together.
- Needed for Scrubbing Meeting.
- **Done by Institute Representatives.**
- I will send an email to all Institutes (with examples).
- BoE back to me within a week maximum, as more than one iteration might be needed: final BoE for scrubbing meeting.

Prioritization

- a. How well does the task fit with US ATLAS interests
- b. How well is the proposal integrated into ATLAS-wide planning
- c. Does the necessary expertise/resources exist at the institute
- d. Has R&D work already been done on this task at the institute
- e. Is the work/resources plan well-developed and realistic

Pixels Budget

- Inputs/wishes from all Institutes (x12) received in September: Inputs to JOG.
- Labor/MS/Travel: \$31.118M Versus \$21.181M (guidance).
- However, some “easy” savings:
 - Need 2 Module Assembly sites (versus 4 in wish-list).
 - Need 1 Stave Loading site (versus 2).
 - Need 1 Powering option (versus 2).
 - Need 1 Stave Flex option (versus 2).
 - No Integration (supported by OPS funds).
 - Total: ~\$7M.
- For an activity with several options:
 - Can fund only one option (leading to a deliverable) with Construction funds.
 - Picked most conservative (expensive) option.
 - Others will be funded by R&D funds.

Pixels Budget

Initial Proposal: open to discussion!

Must Keep:

IST at UWA/LBNL.	313.75
Twinax at SLAC.	1050.15
I-Beam at LBNL/SLAC/ANL	4749.10
Twisted pairs at UCSC.	649.47
Stave-flex (one option UNM-OkS).	393.01
FE Chip at LBNL/UWA.	1594.62
Bump bonding at one site (SLAC, ANL, UCSC)	205.68
Module Assembly/Testing at two sites (ANL, LBNL, SLAC, UCSC)	4913.36
Module Testing at UNM.	87.67
HALT/HASS at OkU.	515.38
Powering (Serial/Pulse)	954.39
Stave Loading (SLAC).	2241.64
Optical links (opto boards) at OSU.	2510.58
Test Setups at SLAC/STONY/UWA/ANL (50%).	1155.94
Total:	21334.74

Not far from guidance (\$21.181M)

Need to update some cost estimates.

Pixels Budget and Prioritization

Two main items missing:

- End Of Stave at SLAC: \$873K.

Not clear what will be needed. Simple version (vs IBL). SLAC has best expertise (ITk wide).

- Optical links at SMU: \$1143K. General development for Phase-II?
- FY17 issue will actually free up some money (cuts + R&D funds).

Other Items:

- 3D testing at UNM (R&D collaboration with FBK). Small amount, considering to be part of base budget.
- Test setups: up to 100%.